

REMARKS

Status of the Claims

Claims 10-13 were previously canceled; claims 8-9 are presently canceled without prejudice.

Claims 1-7 and 14-15 are currently amended. Support for the claim amendments can be found in the throughout the specification as filed. In particular, with respect to each variable therein:

R¹: see, e.g., page 8, lines 21-33, the Examples and Figures 1-3;

R²: see, e.g., page 6, lines 9-11;

R³: see, e.g., page 7, lines 7-21, the Examples and Figures 1-3

R⁴: see, e.g., page 8, line 27 through page 9, line 9; and

X: see, e.g., page 6, the Examples and Figures 1-3.

Claims 17-19 are newly added in this response. Support for new claims 17-19 can be found in the throughout the specification as filed. In particular, with respect to each claim:

Claim 17: see, e.g., page 6; and

Claim 18-19: see, e.g., the Examples and Figures 1-3.

Rejection of Claims 1-9 and 14-16 under 35 U.S.C. § 112, first paragraph

The Office has rejected claims 1-9 and 14-16 under 35 U.S.C. § 112, first paragraph, asserting that they are not enabled. The rejections of canceled claims 8 and 9 are moot.

Claims 1-7 and 14-16 have been amended to more specifically define the moieties R¹, R², R³, R⁴ and X. The Applicants submit that in light of the present claim amendments, the full scope of the claims is enabled and respectfully request that the Office withdraw the rejection.

Rejection of Claims 6, 8, and 14 under 35 U.S.C. § 112, second paragraph

The Office has rejected claims 6, 8 and 14 under 35 U.S.C. § 112, second paragraph, asserting that they are indefinite. The rejection of canceled claim 8 is moot.

In order to advance prosecution, Applicants have amended claim 6 to recite that R⁴ is substituted with one of a list of preferred electron withdrawing moieties. Accordingly, Applicants submit that claim 6 as amended is definite, and request that the Office withdraw the rejection thereof.

Nonetheless, Applicants respectfully disagree with the Office regarding the definiteness of the term “electron withdrawing moiety.” The Applicants submit that the term is familiar to those skilled in the art and does not introduce ambiguity into the claims. According to M.P.E.P. § 2173.02,

Definiteness of claim language must be analyzed, not in a vacuum, but in light of:

- (A)The content of the particular application disclosure;
- (B)The teachings of the prior art; and
- (C)The claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made.

In reviewing a claim for compliance with 35 U.S.C. § 112, second paragraph, the examiner must consider the claim as a whole to determine whether the claim apprises one of ordinary skill in the art of its scope and, therefore, serves the notice function required by 35 U.S.C. § 112, second paragraph, by providing clear warning to others as to what constitutes infringement of the patent.

(emphasis added). Because the skilled artisan would have understood the meaning of “electron withdrawing moiety,” Applicants submit that claims properly using the term “electron withdrawing moiety” would have apprised one of ordinary skill in the art of the scope of the claim.

The rejection of claim 14 was based on the use of the terms “derivative,” “conjugate” and “multimer.” In order to advance prosecution, these terms have been removed from claim 14. Accordingly, Applicants submit that claim 14 as amended is definite, and request that the Office withdraw the rejection thereof.

Rejection of Claims under 35 U.S.C. § 103(a)

To establish a *prima facie* case of obviousness three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the references, when combined must teach or suggest all the claim limitations. *See* M.P.E.P. § 2143.

A. Rejection of Claims 1-5, 8-9, and 14-16 over Wong *et al.* (U.S. Patent No. 5,830,871; 'Wong')

The Office alleges that Wong discloses the use of compounds that have a "strong structural similarity" with compounds of the generic formulae Ia and Ib of the instant claims and specifically refers to compounds listed in columns 5 and 7.

Wong is related to E-, P- and L-selectin inhibitors (see, column 1 under technical field) and does not teach and is not concerned with providing inhibitors which show selectivity for any particular selectin. The range of structural formulas was provided as such, without any teaching on how the nature and structural conformation of the different substituents attached to the monosaccharide could have an effect on the blocking activity on the different selectins.

None of the compounds in Columns 5 or 7 of the Wong patent contain a functional group as presently claimed at the R¹ variable. Notably, all of these compounds are substituted with R¹=OH. As the present inventors have discovered, "R¹ is much more critical than R³." The present inventors have discovered that selective affinity to P-selectin is increased when R¹ is an equatorially-disposed ether, N-substituted amine, N-substituted amide, ester, N-substituted carbamate or N-substituted urea as recited in claim 1 instead of a mere hydroxyl group as taught in Wong. The claimed compounds do not have "strong structural similarity" to the compounds disclosed in Wong at the critical substituent R¹; in fact, the R¹ substituents in the claimed compounds are all very different than the relatively compact, polar, hydrogen bonding hydroxyl group. The Applicants submit that, even when taken with the knowledge of the skilled artisan, Wong provides no teaching or suggestion to make such significant modifications at the critical R¹ position to yield the presently claimed compounds with any expectation of success in achieving selective inhibition of P-selectin. Accordingly, the Applicants respectfully request that the Office withdraw this obviousness rejection.

B. Rejection of Claims 6 and 7 under 35 USC § 103(a) over Wong et al. (U.S. Patent No. 5,830,871; ‘Wong’) in view of DeFrees et al. (U.S. Patent No. 5,604,207; ‘DeFrees’) and further in view of Wong et al. (J. Am. Chem. Soc. 1997, 119, 8152-8158; ‘Wong II’)

The Applicants refer to their previous discussion of the Wong, *supra*. Neither DeFrees nor Wong II describe or suggest compounds as presently claimed.

DeFrees relates to oligosaccharide selectin inhibitors, not the present glucose-based compounds. In light of the unpredictability of the chemical and biochemical arts, any use in DeFrees’ of the use of aryl, phenyl, and naphthyl substituents, in distinctly larger and more complex oligosaccharide compounds, cannot be relied upon by one skilled in the art when considering the glucose-based inhibitors of the present invention. Moreover, DeFrees does not teach or suggest that the oligosaccharide compounds described therein have any selectivity for P-selectin. Accordingly, the skilled artisan would not expect from the teachings of DeFrees that the compounds of the claimed invention would have high selectivity for P-selectin.

Wong II does not disclose or suggest compounds containing a functional group as presently claimed in the R¹ moiety. The statement therein that incorporation of additional electrostatic and hydrophobic interactions could yield compounds with better binding ability does not direct one skilled in the art as to which functional group to modify in the manner suggested by the Office. In fact, Wong II appears to suggest, at most, the incorporation of hydrophobic groups at the R³ position and in the α,β-dihydroxyketone moiety bearing R², not in the R¹ moiety. Moreover, the only P-selectin selective compounds taught in Wong II (4 and 4a) have the R¹=OH axially disposed, not equatorially disposed as in the compounds of the present invention.

The Applicants submit none of the cited documents alone, or in any combination, teach or suggest all the instant claim limitations. Thus, the combination of these references fails to establish a *prima facie* case of obviousness. Accordingly, the Applicant respectfully requests that the Office withdraw this obviousness rejection.

Conclusion

Applicants respectfully submit that all requirements of patentability have been met. Allowance of the claims and passage of the case to issue are therefore respectfully solicited. If the Examiner has any questions or comments regarding this Amendment, he is encouraged to contact the undersigned as indicated below.

Respectfully submitted,

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